Gestational Diabetes:

An Overview

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Gestational Diabetes: An Overview Objectives

At the completion of this presentation, the participant will be able to:

- Define gestational diabetes
- Discuss screening strategies and diagnostic criteria
- Discuss the management of GDM within the framework of the AADE 7: healthy eating, being active, monitoring, taking medications, problem-solving, healthy coping and reducing risks

What is Gestational Diabetes?

- Carbohydrate intolerance of variable severity with onset or first recognition during pregnancy
- Progressive insulin resistance due to increased placental hormone secretion and weight gain, exceeding the capacity of the beta-cell to respond

Complications Associated with GDM

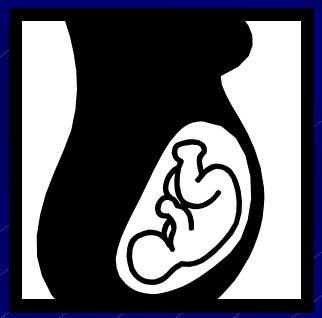
Maternal

- Hypertension
- Polyhydraminos
- Preterm delivery
- Cesarean section

Fetal

- Macrosomia
- Preterm birth
- Hypoglycemia
- Hypocalcemia, hyperbilirubinemia
- Respiratory distress syndrome
- Increased rate of stillbirth

Effect of Maternal Glucose on Fetus



Fetal Hyperglycemia

Stimulates Pancreas

Hyperinsulinemia

Placenta

Glucose

Insulin

GDM: By the Numbers

- GDM affects about 4% of all pregnant women
- 135,000 cases diagnosed in the US annually
- Occurs more frequently among African Americans, Hispanic/Latino Americans and Native Americans
- Women with GDM have a 20-50% chance of developing diabetes within 10 years

Screening Strategy: Detecting GDM

- Low risk:
  - Age < 25 years
  - Weight normal before pregnancy
  - Member of an ethnic group with a low prevalence of GDM
  - No known diabetes in first-degree relatives
  - No history of abnormal glucose tolerance
  - No history of poor obstetric outcome

American Diabetes Association Clinical Practice Recommendations, *Standards of Medical Care in Diabetes*. Diabetes Care, Vol. 29, Suppl. 1, p.s7, January 2006.

Screening Strategy

- Average risk:
  - Blood glucose testing at 24-28 weeks
- High risk:
  - Marked obesity, strong family history of type 2 diabetes, personal history of GDM, glucose intolerance or glycosuria
  - Various ethnic groups with high prevalence of GDM
  - Evaluate for glucose intolerance as soon as possible
  - Re-evaluate at 24-28 weeks if GDM is not found with initial screening

American Diabetes Association Clinical Practice Recommendations, *Standards of Medical Care in Diabetes*. Diabetes Care, Vol. 29, Suppl. 1, p.s7, January 2006.

Diagnosis of GDM

- One-step Approach
  - * Diagnostic OGTT
- Two-step Approach
  - * Screen with 50 gram oral glucose
    1 hr $\geq$ 130 mg/dl identifies 90%
  - * Diagnostic OGTT to confirm diagnosis

Diagnosis of GDM

- 100 gram oral glucose load; two or more venous plasma concentrations must be met or exceeded for positive diagnosis (Carpenter-Coustan)

	mg/dL
Fasting	≥95
1 hour	≥180
2 hour	≥155
3 hour	≥140

American Diabetes Association Clinical Practice Recommendations, *Standards of Medical Care in Diabetes*. Diabetes Care, Vol. 29, Suppl. 1, p.s7, January 2006.

American Association of Diabetes Educators, *The Diabetes Educator,* Sept/Oct, 2003

Self Care Behavior:
Healthy eating

- Nutritional recommendations based on individual nutrition assessment
- Achieve and maintain normoglycemia
- Provide a nutritionally adequate diet for pregnancy

Self Care Behavior:
Being active

- ACOG recommendation: 30 minutes or more of moderate exercise a day on most, if not all, days of the week if no medical or obstetric complications

Self Care Behavior:
Being active

- Prevention of GDM:

  Compared with women who were sedentary both at an early age (18-22 years) and before the index pregnancy, those who frequently engaged in vigorous activity (stair climbing, fast-paced walking) had a 26% lower risk for GDM.

Data from Nurses Health Study II
Presented at ADA 65th Scientific Sessions, 2005

Self Care Behavior:
Monitoring

- Blood glucose monitoring
  - At least four times daily (fasting and 1 or 2 hours post-prandial)
- Urinary ketone testing
  - Daily, fasting
- Review records of values weekly
  - Call in, fax back, email if not coming in that week
  - Bring in, if appointment scheduled
  - Patient accountability

Self Care Behavior:

Monitoring

Guidelines for Insulin Initiation in GDM

	*Plasma Goals**
Fasting	*≤ 105 mg/dl*
1 hour post-prandial	*≤ 155 mg/dl*
2 hour post-prandial	*≤ 130 mg/dl*

**Whole blood goals are ~10% lower*

American Diabetes Association. *Position Statement*: *Gestational Diabetes Mellitus*. Diabetes Care, Vol. 27, Suppl. 1, p.s88, January 2004.

Self Care Behavior:
Monitoring

- Urine ketones may be useful in detecting insufficient caloric or carbohydrate intake in women treated with calorie restriction

- Goal is *absence* of urine ketones

Self Care Behavior:
Monitoring

- Nonstress Testing (NST)
- Contraction Stress Test (CST)
- Biophysical Profile (BPP)
- Ultrasonography
- Fetal Movement Counting (Kick Counts)
- Amniocentesis
- Maternal Serum Alpha Fetal Protein (AFP)

American Dietetic Association *Guide to Gestational Diabetes Mellitus*. p.38-31, 2005.

Normal Insulin Requirement During Pregnancy

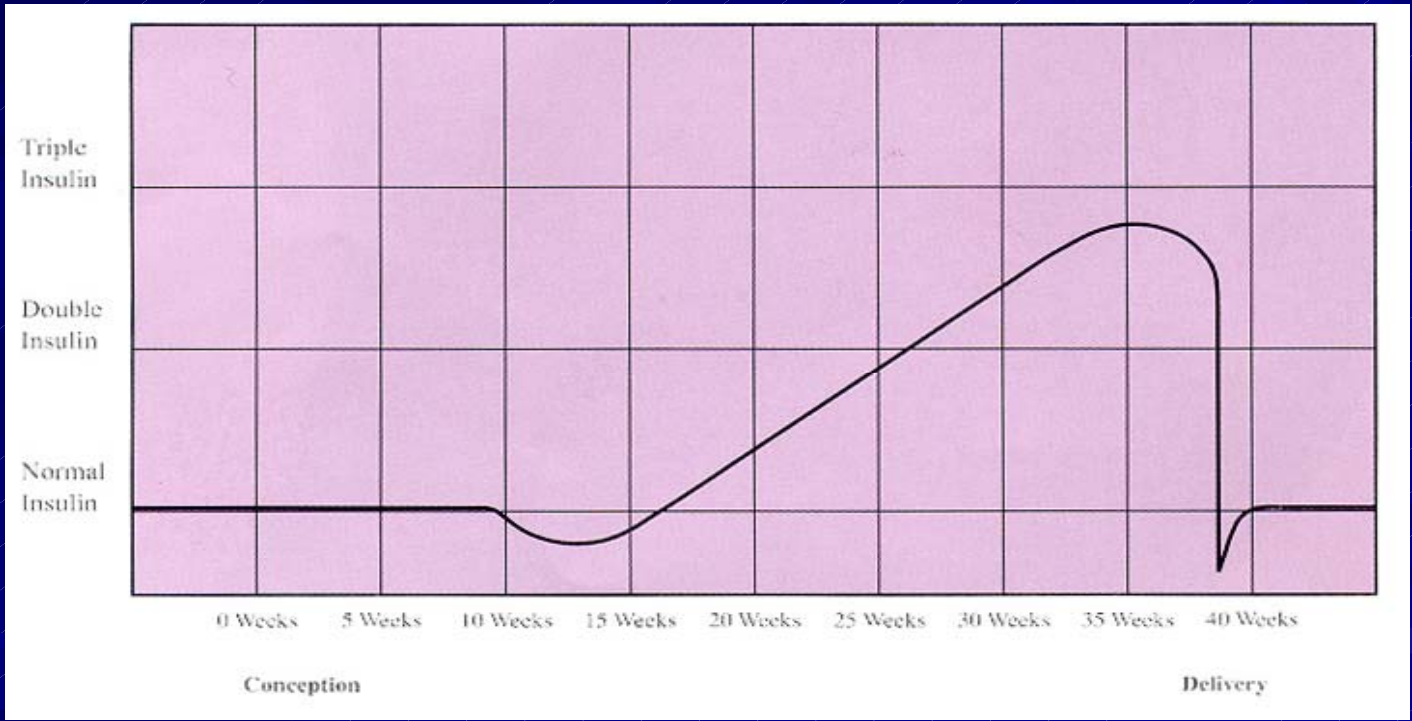


Diagram from *Diabetes Management for Mothers to Be "You can do it"*. Bayer Corporation, 1999.

Self Care Behavior:
Taking medication

- **Human *insulin* is the gold standard for use in pregnancy.**
- ***Lispro* and *aspart* are now accepted as part of general diabetes pregnancy care; *glargine* and *detemir* are not yet recommended.**
- **Oral agents have generally not been recommended during pregnancy. Data is accumulating on the use of *glyburide, metformin* and *acarbose*.**

American Diabetes Association Clinical Practice Recommendations, *Gestational Diabetes Mellitus*. Diabetes Care, Vol. 28, Suppl. 1, p.s89, January 2004.

Dang-Kilduff, L. *Diabetes and Pregnancy: New Technology and Therapy for 2005.* The Cutting Edge, American Dietetic Association, Vol. 26, No. 4. Summer 2005.

Self Care Behavior:
Problem-solving

Frequently Asked Questions…

- Will my baby be OK?
- Will my baby have diabetes?
- Can I exercise?
- Will I have to have a “C-Section”?
- Should I not eat if my blood sugar is too high?, When do I call?
- What do I do if I have ketones?

Self Care Behavior:
Problem-solving

- Calorie/carbohydrate adjustment
- Progress on behavior change goals
- Clarifying issues
- Managing medication

Self Care Behavior:
Healthy coping

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- Adolescents with GDM
- Substance abuse
- Cultural issues

American Dietetic Association *Guide to Gestational Diabetes Mellitus*. p.86-99, 2005.

Self Care Behavior:
Healthy coping

Tips for Dads

- One, two, tie her shoe
- Three, four, open her door
- Five, six, support her fingersticks
- Seven, eight, don't ask about her weight
- Nine, ten, start this list again

ADAPTED FROM Dunton, D. *What You Can Do For Her When She is Expecting.*

Self Care Behavior:

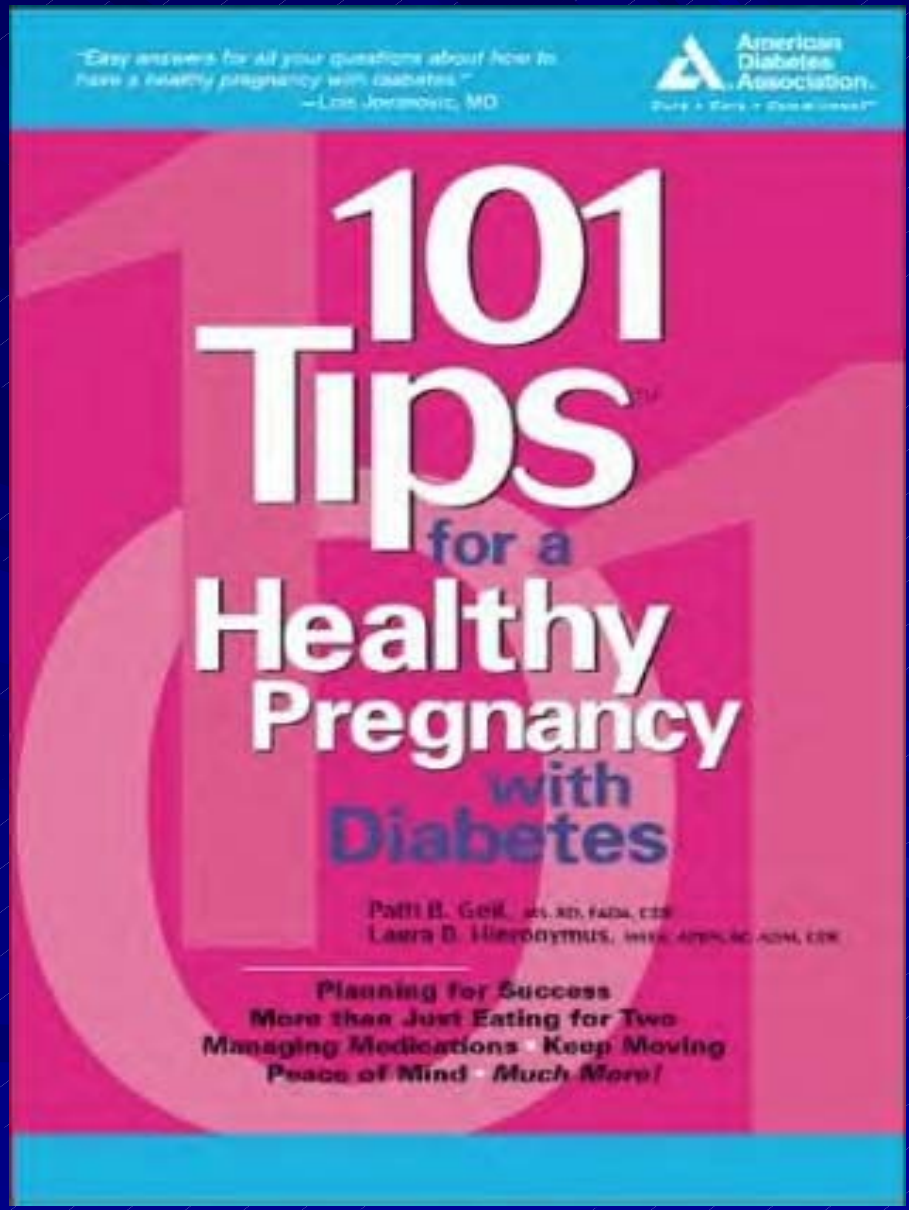
Reducing risks

- Six week post-partum glucose evaluation
- Impaired fasting glucose (IFG) or impaired glucose tolerance (IGT) postpartum (pre-diabetes) should be treated with intensive nutrition/exercise program
- Modifying risks for Type 2 diabetes
- Ongoing risk for GDM
- Annual Type 2 screening

American Diabetes Association Clinical Practice Recommendations, *Gestational Diabetes Mellitus*. Diabetes Care, Vol. 28, Suppl. 1, p.s90, January 2004.

A new baby is like the beginning of all things - wonder, hope, a dream of possibilities.

-Edna J. Leshan


"Easy answers for all your questions about how to have a healthy pregnancy with diabetes."
—Lois Jovanovic, MD
American Diabetes Association.
101 Tips for a Healthy Pregnancy with Diabetes
Patti B. Geil
Laura D. Hieronymus
Planning for Success
More than Just Eating for Two
Managing Medications • Keep Moving
Peace of Mind • Much More!

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